PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:

Joseph R. Little

Serial No.: 09/542,782

Filed: April 4, 2000

For: APPARATUS AND METHOD FOR FEATURE EDGE DETECTION IN SEMICONDUCTOR PROCESSING

Confirmation No.: 6869

Examiner: S. Yam

Group Art Unit: 2878

Attorney Docket No.: 2269-4298US

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REPLY BRIEF

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attn: Board of Patent Appeals and Interferences

Sir:

This Reply Brief is being filed pursuant to 37 C.F.R. § 41.41 and in response to the Examiner's Answer dated April 5, 2005. As June 5, 2005, fell on a Sunday and this Reply Brief is being filed by Monday, June 6, 2005, this Reply Brief should be deemed to have been filed within two months of the mailing date of the Examiner's Answer. 37 C.F.R. § 1.7.

VII. ARGUMENT

A. REJECTIONS UNDER 35 U.S.C. § 102

3a. PRAMANIK

Claims 21, 23, 32, 33, and 36-38 stand rejected under 35 U.S.C. § 102(b) for reciting subject matter which is purportedly anticipated by the disclosure of Pramanik.

Independent claim 21 recites a method for determining a destination of a semiconductor device substrate. The term "destination" is well-known to mean "[t]he place to which one is going or directed." The American Heritage Dictionary of the English Language, Fourth Edition (2000, Houghton Mifflin Company).

The Examiner incorrectly interprets the term "destination" to include the orientation of a substrate once it has already reached its desired destination. This is because the technique disclosed in Pramanik is not employed until a substrate reaches its desired destination, or place. *See, e.g.,* col. 1, lines 27-30. Once there, the process of Pramanik, which includes analyzing alignment marks or shallow trench isolation (STI) structures of the substrate, is used to determine how much the substrate should be rotated to place it in its appropriate orientation at that destination. *See id.*

Therefore, Pramanik does not expressly or inherently describe "identifying a predetermined *destination* for [a] semiconductor device substrate based on [a] mark," as is required by independent claim 21. (Emphasis supplied). As such, Pramanik does not anticipate each and every element of independent claim 21, as would be required to uphold the Examiner's final rejection of independent claim 21 under 35 U.S.C. § 102(b).

Claims 23, 32, 33, and 36-38 are each allowable, among other reasons, for depending directly or indirectly from claim 21, which is allowable.

3b. NOGUCHI

Claims 41 and 49-54 stand rejected under 35 U.S.C. § 102(b) for being drawn to subject matter which is assertedly anticipated by the subject matter disclosed in Noguchi.

The Examiner's Answer does not accurately characterize the position that has been taken by Appellants with respect the disclosure of Noguchi, as set forth in the Appeal Brief. Specifically, the Examiner's Answer, at page 16, distorts the context of Appellant's statements, asserting that an argument has been presented that Noguchi does not describe "that sensor devices [are] used to detect the marking formed by the character pad 13" mentioned in Noguchi.

Appellants do not contend that the sensor of Noguchi may not be used to identify the features of a character pad. Appellants merely submit that the description of Noguchi is limited to sensing features of the character pad through materials that are at least about 90% transparent to a visible wavelength (350 nm) of radiation. Col. 5, lines 16-18. As the disclosure of Noguchi is limited in this manner, it is clear that Noguchi does not expressly or inherently describe a system that includes at least one radiation source that is configured and positioned to direct, toward a substrate, at least one wavelength of electromagnetic radiation capable of at least partially penetrating a material that is substantially opaque to at least some wavelengths of electromagnetic radiation, as would be required to anticipate each and every element of independent claim 41 under 35 U.S.C. § 102(b).

Each of claims 49-54 is allowable, among other reasons, for depending either directly or indirectly from claim 41, which is allowable.

In view of the foregoing, it is respectfully requested that the 35 U.S.C. § 102(b) rejections of claims 21, 23, 32, 33, 36-38, 41, 49-54 be reversed.

B. REJECTIONS UNDER 35 U.S.C. § 103(a)

3a. PRAMANIK IN VIEW OF NOGUCHI

Claims 1-3 and 6-18 stand rejected under 35 U.S.C. § 103(a) for being directed to subject matter which is allegedly unpatentable over teachings from Pramanik, in view of the subject matter taught in Noguchi.

The Examiner asserts that one of ordinary skill in the art would have been motivated to combine the teachings of Pramanik, which relate to techniques for identifying alignment marks and STI structures through opaque layers, with the optical character recognition (OCR) capabilities that are taught in Noguchi.

The Examiner has failed to consider the reference teachings in their entireties, however, as required by M.P.E.P. § 2141.02. Specifically, the teachings Pramanik relate to analysis of alignment marks or STI structures after a substrate has reached a desired destination so that the substrate may be properly oriented at that location. The teachings Noguchi in contrast, relate to visible identification marks to facilitate process and reliability control.

Without improperly relying upon the disclosure of the above-referenced application, one of ordinary skill in the art would not have been motivated to use characters of the type taught in

Noguchi to indicate an appropriate orientation of a semiconductor substrate once it reaches its desired orientation; alignment marks and STI structures are sufficient for that purpose. Conversely, one of ordinary skill in the art would not have been motivated by the teachings of either Pramanik or Noguchi to place opaque layers over the visible identification marks of the liquid crystal display devices of Noguchi, as the marks may easily be placed at locations where they need only be covered by transparent materials.

In view of the foregoing, it is respectfully submitted that the Examiner has not established a *prima facie* case of obviousness against any of claims 1-3 or 6-18.

3d. BAREKET IN VIEW OF NOGUCHI

Claims 59 and 60 have both been rejected under 35 U.S.C. § 103(a) for reciting subject matter which is allegedly unpatentable over teachings from Bareket, in view of the subject matter taught in Noguchi.

Independent claim 59 is directed to a processor for characterizing at least one material-covered recessed marking formed in a substrate and a type of semiconductor device being fabricated on the substrate. The processor of independent claim 59 includes, among other things, at least one logic circuit for comparing a measured intensity of at least one wavelength of reflected radiation to a baseline intensity of the at least one wavelength of radiation reflected from a planar portion of the substrate.

It has been asserted in the Examiner's Answer that "both [the] measured and baseline" intensities of Bareket "are representative of reflection off a planar portion of the substrate." This is not true. As those of ordinary skill in the art of semiconductor device fabrication are fully

aware, the only features of a semiconductor device structure that are substantially planar are those that have been planarized or those that lack patterned features like the characters of Bareket and Noguchi. As such, the measured intensities of Bareket are not representative of reflection off a planar portion of a substrate.

Furthermore, the teachings of Bareket and Noguchi are limited to OCR type systems, in which measurements are taken at a single, character-bearing location. While some of the measurements indicate the presence of one or more characters, the remaining measurements are indicative of the lack of characters and, thus, are useful in defining the periphery of each character, which is useful in identifying each character. There is no need for a separate, baseline measurement at a different, planar location of the substrate.

Moreover, as neither Bareket nor Noguchi teaches or suggests a processor with a logic circuit that is configured to compare a measured intensity of at least one wavelength of radiation reflected from a substrate to a baseline intensity of the at least one wavelength of radiation reflected from a planar portion of the substrate, it is not understood how, without improperly relying upon the disclosure of the above-referenced application, one of ordinary skill in the art could have been motivated to combine the teachings of Barket and Noguchi in the manner that has been asserted.

XI. CONCLUSION

It is respectfully submitted that:

(A) Each of claims 21, 23, 32, 33, and 36-38 is allowable under 35 U.S.C. § 102(b) for reciting subject matter which is novel over the subject matter disclosed in Pramanik;

(B) Claims 41 and 49-54 are allowable under 35 U.S.C. § 102(b) for being drawn to subject matter which is not anticipated by the subject matter disclosed in Noguchi;

(C) Claims 1-3 and 6-18 are allowable under 35 U.S.C. § 103(a) for being directed to subject matter which is patentable over teachings from Pramanik and Noguchi;

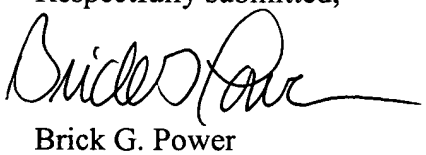
(D) Each of claims 4, 5, 19, 20, 24, 25, 39, and 40 is allowable under 35 U.S.C. § 103(a) for reciting subject matter which is patentable over the subject matter taught in Pramanik, in view of teachings from Noguchi and Bareket;

(E) Claims 42-48 and 55-58 are each allowable under 35 U.S.C. § 103(a) for being directed to subject matter which is nonobvious in view of teachings from Noguchi and Duncan; and

(F) Claims 59 and 60 are both allowable under 35 U.S.C. § 103(a) for reciting subject matter which is patentable over teachings from Bareket and Noguchi.

Accordingly, the rejections of claims 1-60 should be reversed, and each of these claims should be allowed.

Respectfully submitted,



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First Named Inventor	Joseph R. Little
Group Art Unit	2878
Examiner Name	S. Yam
Attorney Docket Number	2269-4298US (99-0996.00/US)

ENCLOSURES *(check all that apply)*

- ☒ Postcard receipt acknowledgment (attached to the front of this transmittal)
- ☒ Duplicate copy of this transmittal sheet in the event that additional filing fees are required under 37 C.F.R. § 1.16
- ☐ Preliminary Amendment
- ☐ Response to Restriction Requirement/Election of Species Requirement dated
- ☐ Amendment in response to office action dated
- ☐ Amendment under 37 C.F.R. § 1.116 in response to final office action dated
- ☐ Additional claims fee - Check No. in the amount of $
- ☐ Letter to Chief Draftsman and copy of FIGS. with changes made in red
- ☐ Transmittal of Formal Drawings
- ☐ Formal Drawings (sheets)
- ☐ Information Disclosure Statement, PTO/SB/08A (08-00); ☐ copy of cited references
- ☐ Supplemental Information Disclosure Statement; PTO/SB/08A (08-00); copy of cited references and Check No. in the amount of $180.00
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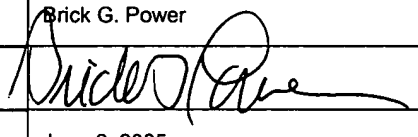
Remarks

The Commissioner is authorized to charge any additional fees required but not submitted with any document or request requiring fee payment under 37 C.F.R. §§ 1.16 and 1.17 to Deposit Account 20-1469 during pendency of this application.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm *or* Individual name	Brick G. Power	Registration No. 38,581
Signature		
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